

JUL 05 2007

Application No: 10/733,393
Attorney's Docket No: ALC 3109**CLAIM AMENDMENTS**

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A method of monitoring traffic flows in a service provider domain of a communications network, the domain being logically ~~arranged~~ configured as a virtual router network having virtual interfaces at edge nodes of the ~~domain~~ virtual router network, comprising the steps of:

a) configuring said virtual interfaces with a respective real-time flow measurement meter, said respective real-time flow measurement meter having a uniform behavior with respect to a real-time flow measurement.

b) ~~determining~~ at a determining, at said virtual interface ~~interfaces~~ and in dependence upon a ~~rule set~~ flow monitoring rule set consistent for all of said virtual interfaces, whether a packet belongs to a flow to be monitored;

b)-c) accounting, responsive to the packet belonging to a flow to be monitored, the packet in a flow record corresponding to that flow maintained by said respective real-time flow measurement meter; and

e)-d) aggregating the flow records from all virtual interfaces at a master virtual interface for transmission to a collector for enabling said service provider to identify if a specified flow record abides to terms of a corresponding service level agreement pertaining to said specified flow record.

Application No: 10/733,393
Attorney's Docket No: ALC 3109

2. (Cancelled)
3. (Currently Amended) The method as defined in ~~claim 2~~ claim 1, further comprising an initial step of selecting one of the virtual interface ~~as a~~ interfaces as the master virtual interface.
4. (Original) The method as defined in claim 3 wherein the step of selecting the master virtual interface is done by polling each of the virtual interfaces to determine which one best satisfies a selection criteria.
5. (Original) The method as defined in claim 4 wherein the selection criteria includes CPU usage, traffic handling capability and memory capacity.
6. (Original) The method as defined in claim 3, further comprising following the selecting step, initiating, by the master virtual interface, distribution of the rule set to the other virtual interfaces.
7. (Original) The method as defined in claim 3 comprising following the selection step, by the master virtual interfaces, collecting aggregated flow records from the other virtual interfaces.
8. (Currently Amended) The method as defined in claim 7, ~~further comprising the step of sending, by the master virtual interface, wherein~~ the aggregated flow records are sent to the

Application No: 10/733,393
Attorney's Docket No: ALC 3109

collector by the master virtual interface.

9. (Currently Amended) The method as defined in claim 7 ~~wherein the~~ wherein collecting aggregated flow records are aggregated using a serial collection of flow table data is performed serially.

10. (Currently Amended) The method as defined in claim 7 ~~wherein the~~ wherein collecting aggregated flow records are aggregated using a parallel collection of flow table data is performed in parallel.

11. (Original) The method as defined in claim 7 wherein the aggregated flow records are provided to the collector using either a push or a pull collector operation.

12. (Original) The method as defined in claim 6 wherein a service manager initiates the triggering selection process by sending a new or updated rule set to the master.

13. (Original) The method as defined in claim 12 wherein the service manager receives aggregated flow records from the collector.

14. (Currently Amended) A system for monitoring traffic flows in a service provider domain of a communications network, the domain being logically ~~arranged~~ configured as a virtual router

Application No: 10/733,393
Attorney's Docket No: ALC 3109

network having virtual interfaces at edge nodes of the domain virtual router network, the system comprising:

means for configuring said virtual interfaces with a respective real-time flow measurement meter, said respective real-time flow measurement meter having a uniform behavior with respect to a real-time flow measurement;

means at each said virtual interface for determining in dependence upon a flow monitoring rule set consistent for all of said virtual interfaces, whether a packet belongs to a flow to be monitored;

means for accounting, responsive to the packet belonging to a flow to be monitored, the packet in a flow record corresponding to that flow maintained by said respective real-time flow measurement meter; and

means for aggregating the flow records from all virtual interfaces at a master virtual interface for transmission to a collector.

15. (Currently Amended) The system as defined in claim 14 ~~having multiple virtual interfaces~~ wherein one of said virtual interfaces is selected ~~as~~ as the master virtual interface.

16. (Original) The system as defined in claim 15 wherein the master virtual interface has means to distribute rule sets to other virtual interfaces.

17. (Original) The system as defined in claim 16 wherein the master virtual interface has

Application No: 10/733,393
Attorney's Docket No: ALC 3109

means to collect aggregated flow records from the other virtual interfaces and to report the aggregated flow records to a collector.

18. (Original) The system as defined in claim 17 having a service manager to initiate a selection of the master virtual interface and to collect aggregated flow records from the collector.

19. (Currently Amended) A method of measuring per-flow traffic delay between two routers having synchronized clocks, comprising the steps of:

- a) calculating, at each of the routers, a key uniquely and invariantly ~~identifying~~identifying a corresponding packet in the flow;
- b) selecting, at each of the routers using the key, a packet to be monitored;
- c) recording, at each of the routers, a timestamp upon selection of each packet; and
- d) subtracting the timestamps to determine the delay for the packet.

20. (Original) The method as defined in claim 19 wherein multiple packets are monitored and an average delay for the multiple packets is calculated.

21. (Currently Amended) The method as defined in claim 20 wherein if a key ~~can not~~cannot be calculated within a given time interval indicating lost packets the calculating step is stopped.

Application No: 10/733,393
Attorney's Docket No: ALC 3109

22. (Currently Amended) A computer-implemented system for measuring per-flow traffic delay between two routers having synchronized clocks, comprising:

means for calculating, at each of the routers, a key for every packet in the flow, wherein the key uniquely and invariantly identifies a corresponding packet in the flow;

means for selecting, at each of the routers using the key, a packet to be monitored; means for recording, at each of the routers, a timestamp upon selection of each packet; and

means for subtracting the timestamps to determine the delay for the packet.

23. (Original) The system as defined in claim 22 wherein the routers are edge routers in a virtual router network.

24. (Original) The system as defined in claim 23 wherein one of said edge routers is selected as a master edge router and packet filtering information is aggregated and correlated at said master edge router.

25. (Original) The system as defined in claim 23 wherein one of said edge routers is selected as a master edge router and the aggregation and correlation processes of packet filtering information are distributed among the edge routers, the results being sent and compiled at said master edge router.

Application No: 10/733,393
Attorney's Docket No: ALC 3109

26. (Original) The system as defined in claim 24 having a service manager to receive said packet filtering information.